REMARKS

This is intended as a full and complete response to the Office Action dated March 9, 2006, having a shortened statutory period for response set to expire on June 9, 2006. Please reconsider the claims pending in the application for reasons discussed below.

Claims 11-26, 28-33, and 35-39 remain pending in the application and are shown above. Claims 11-26, 28-33, and 35-39 are rejected by the Examiner. Reconsideration of the rejected claims is requested for reasons presented below.

Claims 12-21 and 33 are amended to clarify the invention and address rejections under 35 U.S.C. §112. Claims 36 and 37 have been amended, and new claims 40-46 have been added, to clarify the claimed subject matter. Applicant submits that no new matter has been added and respectfully requests entry of the claims as amended.

Claims 11, 15, 17-21, and 23 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan, et al.* EP 0 814 495 in view of *Collins, et al.*, EP 0 807 953 or *Loewenhardt, et al.*, U.S. Patent 6,030,486. Applicant respectfully traverses the rejection on grounds that the references *Shan, et al.*, *Collins, et al.*, and *Loewenhardt, et al.*, alone or in combination, do not teach, suggest, or provide motivation for the subject matter as claimed.

Applicant submits that the reference *Shan, et al.* teaches a liner without magnets. The reference *Collins, et al.* discloses magnets [80], [82] and a liner [60a], but the magnets are not taught or suggested to be located in the liner, thus failing to suggest the asserted combination of *Shan, et al.* and *Collins, et al.* The reference *Loewenhardt, et al.* teaches opposing magnets [80], [82] as integral parts of the sidewall [14] and the bottom peripheral surface [58] of the wafer pedestal [18] and fails to support the use of any liners by using magnetic fields from the opposing magnets in order to "...shield a selected surface of the reactor chamber interior from the plasma by imposing a magnetic field across a path traveled by the plasma in reaching that surface." (Col. 2, Lines 37-39) Further, the magnetic elements disclosed by *Collins, et al.* and *Loewenhardt, et al.* are not taught or suggested to extend into a processing region.

Therefore, Applicant submits that the references *Shan, et al.*, *Collins, et al.*, and *Loewenhardt, et al.*, alone or in combination, do not teach, suggest, or provide

motivation for a thermally controlled apparatus for lining a processing region defined at least partially by sidewalls, a substrate support, and a bottom of a processing chamber, comprising a liner adapted to be removably disposed in the processing region and having a base for substantially covering the bottom of the processing chamber, wherein the liner further comprises an outer cylindrical wall contacting an outer edge of the base for extending into the processing region along the sidewalls, the outer cylindrical wall having a first protrusion spaced above the base, and an inner cylindrical wall connected to an inner edge of the base for extending into the processing region along the substrate support, the inner cylindrical wall having a second protrusion located opposite the first protrusion, and a magnet located in the second protrusion on the inner cylindrical wall of the liner, as recited by claim 11. Withdrawal of the rejection to claim 11, and claims dependent thereon, is respectfully requested.

Claims 12, 14, 16, and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan, et al.*, in view of *Collins, et al.*, or *Loewenhardt, et al.*, as applied to claims 11, 15, 17-21, and 23 above, and further in view of *Lee*, U.S. Patent 5,616,208 or *Masuda, et al.*, U.S. Patent 6,171,438. Applicant respectfully traverses the rejection on grounds that the references *Shan, et al.*, *Collins, et al.*, and *Loewenhardt, et al.*, alone or in combination, do not teach, suggest, or provide motivation for the invention of claim 11 as discussed above. Applicant also submits that the references *Lee* or *Masuda, et al.* do not provide any teaching or suggestion for the elements not found in *Shan, et al.*, *Collins, et al.*, or *Loewenhardt, et al.* Therefore, Applicant respectfully submits that claim 11 is in allowable form and requests withdrawal of the rejection to claims 12, 14, 16, and 22, which depend from claim 11.

Claim 13 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan, et al.*, in view of *Collins, et al.*, or *Loewenhardt, et al.*, and *Lee*, or *Masuda et al.*, as applied to claims 12, 14, and 22 above, and further in view of *Reimold, et al.*, DE 31 10489 A1. Applicant respectfully traverses the rejection on grounds that the references *Shan, et al.*, *Collins, et al.*, and *Loewenhardt, et al.*, alone or in combination, do not teach, suggest, or provide motivation for the subject matter of claim 11 as discussed above. Applicant also submits that the references *Lee*, *Masuda, et al.*, or *Reimold, et al.* do not provide any teaching or suggestion for the elements not found in *Shan, et al.*,

Collins, et al., or *Loewenhardt, et al.* Therefore, Applicant respectfully submits that claim 11 is in allowable form and requests withdrawal of the rejection to claim 13, which depends from claim 11.

Claim 24 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan, et al.*, in view of *Collins, et al.*, or *Loewenhardt, et al.*, as applied to claims 11, 15, 17-21, and 23 above, and further in view of *Banholzer, et al.*, U.S. Patent 5,565,058. Applicant respectfully traverses the rejection on grounds that the references *Shan, et al.*, *Collins, et al.*, and *Loewenhardt, et al.*, alone or in combination, do not teach, suggest, or provide motivation for the subject matter of claim 11 as discussed above. Applicant also submits that the reference *Banholzer, et al.* does not provide any teaching or suggestion for the elements not found in *Shan, et al.*, *Collins, et al.*, or *Loewenhardt, et al.* Therefore, Applicant respectfully submits that claim 11 is in allowable form and requests withdrawal of the rejection to claim 24, which depends from claim 11.

Claims 25-26 and 28-31 are rejected under 35 U.S.C §103(a) as being unpatentable over *Shan, et al.*, in view of *Lee*, U.S. Patent 5,616,208 or *Masuda, et al.*, U.S. Patent 6,171,438 and further in view of *Reimold, et al.*, DE 31 10489 A1. Applicant respectfully traverses the rejection on grounds that the references *Shan, et al.*, *Lee, Masuda, et al.*, and *Reimold, et al.*, alone or in combination, do not teach, suggest, or provide motivation for the subject matter as claimed.

Applicant submits that the reference *Shan, et al.* teaches channels "...surrounding the chamber side wall 20 though which cool water is pumped...", although it is not shown. (Page 9, Lines 31-32). The teaching or suggestion of adding channels fails to motivate integration of passages into the shields [10], [12], the chamber wall [20] and/or the flange [13]. Applicant submits the motivation to add the unshown channels would lead one of skill in the art to surround the exterior of the chamber with channels to not interfere with the dielectric shield [10] and the cathode shield [12] and/or the interior of the chamber. The reference *Lee* teaches a medium path [129] in the wall of the chamber 1, but provides no suggestion of shields or liners and any passages formed at least partially therein. Similarly, the reference *Masuda, et al.* teaches a jacket [103] "...held inside the sidewall 102 of the processing chamber 100..." that lacks any teaching of an apparatus for lining a processing region (*i.e.*

shields, liners) and channels disposed therein. Also, the reference *Masuda, et al.* provides no teaching of jackets that at least are in contact with the bottom of the processing chamber. Thus, the references *Shan, et al.*, *Lee*, and *Masuda, et al.* lack any teaching or suggestion of a base having a channel formed at least partially therein. Further, the references *Shan, et al.*, *Lee*, and *Masuda, et al.* lack any teaching or suggestion of any bosses coupled to inlets or outlets. The reference *Reimold, et al.* teaches a heat exchanger having bosses [3] coupled to a jacket tube [1] with no teaching or suggestion of extending any bosses from the base through a processing chamber.

Applicant respectfully submits that the references *Shan, et al.*, *Lee*, *Masuda, et al.*, and *Reimold, et al.*, alone or in combination, do not teach, suggest, or provide motivation for a thermally controlled apparatus for lining a processing region defined at least partially by sidewalls and a bottom of a processing chamber, comprising an annular base having a perimeter, for substantially covering the bottom of the processing chamber; a first cylindrical wall extending from the perimeter of the base, a substantially annular passage formed at least partially in the base, and a first boss and a second boss projecting from the base, the first boss comprising a hole in fluid communication with the passage at an inlet of the passage, and the second boss comprising a hole in fluid communication with the passage at an outlet of the passage, wherein the first boss and the second boss are configured to extend through the processing chamber, as recited in claim 25. Withdrawal of the rejection to claim 25, and claims dependent thereon, is respectfully requested.

Claim 32 is rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan et al.*, in view of *Lee* or *Masuda et al.*, as applied to claims 25-26 and 28-31 above, and further in view of *Banholzer, et al.*, U.S. Patent 5,565,058. Applicant respectfully traverses the rejection on grounds that the references *Shan, et al.*, *Lee*, *Masuda, et al.*, and *Banholzer, et al.*, alone or in combination, do not teach, suggest, or provide motivation for the claimed subject matter. For reasons discussed above, the references *Shan, et al.*, *Lee*, or *Masuda, et al.* do not teach, suggest, or provide motivation for the subject matter claimed in claim 25. Applicant submits that claim 25 is in allowable form.

Applicant respectfully submits that claim 32, which depends from claim 25, is also in allowable form. Withdrawal of the rejection to claim 32 is respectfully requested.

Claims 33 and 35-39 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan et al.*, in view of *Lee*, or *Masuda et al.* Applicant respectfully traverses the rejection on grounds that the references *Shan, et al.*, and *Lee* or *Masuda, et al.*, alone or in combination, do not teach, suggest, or provide motivation for the subject matter as claimed. As discussed above, the references *Shan, et al.*, *Lee*, and *Masuda, et al.* lack any teaching or suggestion of liners having a channel formed at least partially therein.

Applicant submits that the references *Shan, et al.*, and *Lee* or *Masuda, et al.* alone, or in combination, do not teach, suggest, or provide motivation for a thermally controlled apparatus for lining a processing region defined at least partially by sidewalls and a bottom of a processing chamber, comprising an annular base for substantially covering the bottom of the chamber, a first cylindrical wall coupled to an outer portion of the base for extending into the processing region along the sidewalls of the chamber, a second cylindrical wall coupled to an inner portion of the base for extending into the processing region along a substrate support positioned therein, a ridge extending from the first cylindrical wall toward the second cylindrical wall in a spaced-apart relation to the base, and a substantially annular passage formed at least partially in the base, the passage being fluidly isolated from the processing region, as recited in claim 33. Withdrawal of the rejection to claims 33 and 35 is respectfully requested.

Applicant also submits that the references *Shan, et al.*, and *Lee* or *Masuda, et al.* alone, or in combination, do not teach, suggest, or provide motivation for a thermally controlled apparatus for lining a processing region, comprising a processing chamber having walls surrounding the processing region, a cylindrical liner section adapted to line at least a portion of the walls of the processing chamber, a center section coupled to one end of the cylindrical section, the cylindrical section and the center section being exposed to the processing region and comprising a single piece structure, for substantially covering an upper surface of the chamber, and a substantially annular passage at least partially formed in the center section, the passage being fluidly isolated from the processing region, wherein the substantially annular passage is coupled to a

boss that extends through an aperture formed in the processing chamber, as recited in claim 36. Withdrawal of the rejection to claim 36 is respectfully requested.

Applicant also submits that the references *Shan, et al.*, and *Lee* or *Masuda, et al.*, alone or in combination, do not teach, suggest, or provide motivation for a thermally controlled apparatus for lining a processing region at least partially defined by walls of a processing chamber, comprising a removable center member for substantially covering an upper surface of the chamber, the center member having a first side adapted to be exposed to the processing region, a cylindrical wall extending from the first side of the center member and adapted to line at least a portion of the walls of the processing chamber, and a substantially annular passage at least partially formed in the center member, the passage adapted to isolate a heat transfer fluid flowing therethrough from the processing volume, as recited in claim 37. Withdrawal of the rejection to claim 37, and claims dependent thereon, is respectfully requested.

Claims 36-39 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Shan, et al.*, EP 0 814 495 in view of *Miyamoto*, U.S. Patent 5,846,331. Applicant respectfully traverses the rejection on grounds that the references *Shan, et al.* and *Miyamoto*, alone or in combination, do not teach, suggest, or provide motivation for the subject matter as claimed. The reference *Shan, et al.* is discussed above and lacks any teaching or suggestion to add channels in any liners. The reference *Miyamoto* teaches a flow path [5] in a dielectric member [1] with no teaching or suggestion of a liner.

Applicant submits that the references *Shan, et al.* and *Miyamoto*, alone or in combination, do not teach, suggest, or provide motivation for a thermally controlled apparatus for lining a processing region, comprising a processing chamber having walls surrounding the processing region, a cylindrical liner section adapted to line at least a portion of the walls of the processing chamber, a center section coupled to one end of the cylindrical section, the cylindrical section and the center section being exposed to the processing region and comprising a single piece structure, for substantially covering an upper surface of the chamber; and a substantially annular passage at least partially formed in the center section, the passage being fluidly isolated from the processing region, wherein the substantially annular passage is coupled to a boss that extends

through an aperture formed in the processing chamber, as recited in claim 36. Withdrawal of the rejection to claim 36 is respectfully requested.

Applicant also submits that the references *Shan, et al.* and *Miyamoto*, alone or in combination, do not teach, suggest, or provide motivation for a thermally controlled apparatus for lining a processing region at least partially defined by walls of a processing chamber, comprising a removable center member for substantially covering an upper surface of the chamber, the center member having a first side adapted to be exposed to the processing region, a cylindrical wall extending from the first side of the center member and adapted to line at least a portion of the walls of the processing chamber, and a substantially annular passage at least partially formed in the center member, the passage adapted to isolate a heat transfer fluid flowing therethrough from the processing volume, as recited in claim 37. Withdrawal of the rejection to claim 37, and claims dependent thereon, is respectfully requested.

Claims 36-39 are rejected under 35 U.S.C. §103 (a) as being unpatentable over *Shan et al.*, EP 0 814 495 in view of *Masuda, et al.*, U.S. Patent 6,171,438. Applicant respectfully traverses the rejection on grounds that the references *Shan, et al.* and *Masuda, et al.*, alone or in combination, do not teach, suggest, or provide motivation for the invention as claimed. The reference *Shan, et al.* is discussed above and lacks any teaching or suggestion to add channels in any liners. The reference *Masuda, et al.* teaches a jacket [103] "...held inside the sidewall 102 of the processing chamber 100..." that lacks any teaching of liners and channels disposed therein.

Applicant submits that the references *Shan, et al.* and *Masuda, et al.*, alone or in combination, do not teach, suggest, or provide motivation for a thermally controlled apparatus for lining a processing region, comprising a processing chamber having walls surrounding the processing region, a cylindrical liner section adapted to line at least a portion of the walls of the processing chamber, a center section coupled to one end of the cylindrical section, the cylindrical section and the center section being exposed to the processing region and comprising a single piece structure, for substantially covering an upper surface of the chamber, and a substantially annular passage at least partially formed in the center section, the passage being fluidly isolated from the processing region, wherein the substantially annular passage is coupled to a boss that extends

through an aperture formed in the processing chamber, as recited in claim 36. Withdrawal of the rejection to claim 36 is respectfully requested.

Applicant also submits that the references *Shan, et al.* and *Masuda, et al.*, alone or in combination, do not teach, suggest, or provide motivation for a thermally controlled apparatus for lining a processing region at least partially defined by walls of a processing chamber, comprising a removable center member for substantially covering an upper surface of the chamber, the center member having a first side adapted to be exposed to the processing region, a cylindrical wall extending from the first side of the center member and adapted to line at least a portion of the walls of the processing chamber, and a substantially annular passage at least partially formed in the center member, the passage adapted to isolate a heat transfer fluid flowing therethrough from the processing volume, as recited in claim 37. Withdrawal of the rejection to claim 37, and claims dependent thereon, is respectfully requested.

Applicant submits new claims 40-46 are patentable over the cited references. Specifically, the cited references alone, or in combination, do not teach, suggest, or provide motivation for claims 25, 33, and 36, from which claims 40, 41-44, and 45-46 depend, respectively.

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed.

Having addressed all issues set out in the office action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,

Keith M. Tackett
Registration No. 32,008
PATTERSON & SHERIDAN, L.L.P.
3040 Post Oak Blvd. Suite 1500
Houston, TX 77056
Telephone: (713) 623-4844
Facsimile: (713) 623-4846
Attorney for Applicant(s)